Pacific Gas and Electric Company

Advanced Underground Compressed Air Energy Storage

Project Description

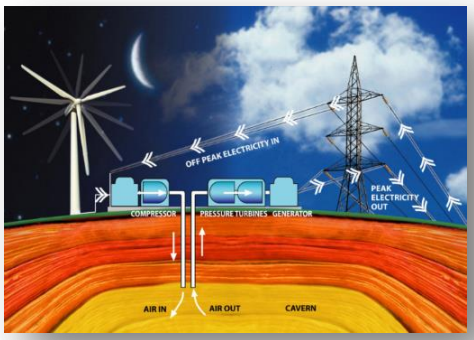
Pacific Gas and Electric Company's (PG&E) advanced underground, compressed air energy storage (CAES) demonstration project is intended to validate the design, performance, and reliability of a CAES plant rated at approximately 300MW with up to 10 hours of storage. The CAES demonstration project is scoped to test the suitability of a porous rock formation as the storage reservoir in California, and demonstrate the technological improvements in the design of such plants. Porous rock formations are much more plentiful than the salt domes now used by the two operational plants in Alabama and Germany. If this geology is proven viable, this technology has the potential to be replicated throughout California and elsewhere in the United States. The project is also differentiated by its potential use of a new CAES plant design that is much more efficient than first generation Alabama and German designs. This project is comprised of three phases. Phase I includes site selection, reservoir testing, preliminary plant design, an environment assessment and a competitive solicitation to determine if there are interested and viable parties for plant construction, ownership and operations/maintenance.
Phase I is estimated to last 4.5 years. Phase II, which includes obtaining approval to proceed with the construction and commissioning of a full CAES plant, has an estimated 6-year duration. Phase III includes operations & monitoring and is expected to occur over 2 years.

Goals/Objectives

- Verify the technical performance of advanced CAES technology using a porous rock formation as the underground storage reservoir
- Integrate intermittent renewable resources
- Maintain emergency spinning/non-spinning reserve and perform volt-ampere reactive/voltage support

Key Milestones

- Complete Core Analysis for Top 2 or 3 Candidate Site Locations (May 2013)
- Facility Final Site Selection & Compression Testing Completion (January 2015)
- Plant Construction Complete (March 2021)



Benefits

- Approximately 475 jobs created or retained during facility construction
- Approximately 25 permanent jobs created to operate the facility
- Greenhouse gas emissions reduced
- Grid reliability improved

CONTACTS

Kimberly Nuhfer
Project Manager
National Energy Technology Laboratory
3610 Collins Ferry Road
Morgantown, WV 26507-0880
304-285-6544
Kimberly.Nuhfer@netl.doe.gov

Michael Medeiros
Principal Investigator
Pacific Gas & Electric Company
77 Beale Street, B5Q
San Francisco, CA 94105-1814
415-973-2182
mjml@pge.com

PARTNERS

TBD

PROJECT DURATION

1/01/2010–03/13/2023

BUDGET

Total Estimated Project Value
$355,938,300

DOE/Non-DOE Share
$25,000,000/$330,938,300

EQUIPMENT

HP/LP Expander Generator
Air-Air Heat Exchanger/Recuperator
Air Compressors
Combustion Turbine

DEMONSTRATION STATES

California

CID: OE0000198

Managed by the National Energy Technology Laboratory for the Office of Electricity Delivery and Energy Reliability